Linear Algebra II

Undergraduate / Graduate	Undergraduate	**Registration Code**	0052221
Course Category	Sciences Basic	**Credits**	2.0
Term (Semester) / Day / Period	G-II (1st year, Spring Semester) / Tue. / 2 (10:30～12:00)		
Instructor	BACHMANN Henrik		
Contact e-mail of the Instructor	henrik.bachmann@math.nagoya-u.ac.jp		

All information on this course will be available on the course page:
https://www.henrikbachmann.com/la2_2022.html

●Goals of the Course
Linearity is one of the most fundamental concepts for the handling of quantities in current natural science. Indispensable in quantum mechanics and relativity, machine learning, engineering, etc., its use has spread across all branches of natural science and beyond. The second half of this one-year course focuses on advanced concepts of Linear algebra, such as the notion of a (real) vector space, determinants, eigenvalues and eigenvectors. Its purpose is to give a deeper and broader understanding of the mathematical theory of linearity, as well as increased proficiency in mathematical reasoning and proof techniques. Later in the course we will try to bring explicit applications of the concepts taught in this course.

●Objectives of the Course
We will begin by generalizing the results from Linear Algebra I and make everything a bit more abstract. This will allow us to apply results from Linear Algebra I to not only vectors, but also, for example, functions. Especially the chapter on eigenvalues will have a lot of real-life applications.

●Course Content or Plan
Vector spaces, determinants and their applications, eigenvalues and eigenvectors, applications of eigenvalue theory, continuous dynamical systems, linear differential equations.

●Course Prerequisites and Related Courses
While not a formal requirement, Linear Algebra I is strongly recommended.
Check https://www.henrikbachmann.com/la1_2021.html for the content of Linear Algebra I.

●Course Evaluation Method and Criteria
There will be two main, written exams: midterm and final Additionally, there will be homework assignments and (just for fun) quizzes.

Course withdrawal: Any student who does not participate in the final exam will receive the grade “Absent”. It is not necessary to submit a course withdrawal request form.

●Study Load(Self-directed Learning Outside Course Hours)
There will be a reference book and several online sources which can be used for additional self-study. The lectures re already recorded and available on YouTube. All information will be available before the course starts. The students will need to submit homework every 2-3 weeks and participate actively in class.

●How to Respond to Questions
You can always contact me via email or social media. Office hours can be provided face-to-face or via Zoom at any time. There will be a Facebook group for communication.

Textbook	None
Reference Book	Otto Bretscher: ***Linear Algebra with Applications***, fourth edition, Pearson
Reference Website for this Course	https://www.henrikbachmann.com/la2_2022.html